COMMONWEALTH OF MASSACHUSETTS ~ STANDARD CONTRACT FORM



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CONTRACTOR LEGAL NAME: Town of Tisbury	COMMONWEALTH DEPARTMENT NAME: Executive Office of Energy & Environmental Affairs MMARS Department Code: ENV
Legal Address: (W-9, W-4,T&C) 51 Spring Street, Tisbury, MA 02568	Business Mailing Address: CZM, 251 Causeway Street, Room 800, Boston, MA 02114
Contract Manager John W. Grande	Billing Address (if different):
E-Mail: jgrande@tisburyma.gov	Contract Manager: Patricia Bowie
508-696-4201 Fax:	E-Mail: Patricia.Bowie@mass.gov
Contractor Vendor Code: VC6000192006	Phone: 617 626-1186 Fax: 617-626-1240
Vendor Code Address ID (e.g. "AD001"): AD001	MMARS Doc ID(s): CT ENV 4300 081919*503
(Note: The Address Id Must be set up for <u>EFT</u> payments.)	RFR/Procurement or Other ID Number: ENV 20 CZM 02
X NEW CONTRACT	_ CONTRACT AMENDMENT
PROCUREMENT OR EXCEPTION TYPE: (Check one option only)	Enter Current Contract End Date <u>Prior</u> to Amendment:, 20
<u>Statewide Contract</u> (OSD or an OSD-designated Department)	Enter Amendment Amount: \$. (or "no change") AMENDMENT TYPE: (Check one option only. Attach details of Amendment changes.)
<u>Collective Purchase</u> (Attach OSD approval, scope, budget)XDepartment Procurement (includes State or Federal grants 815 CMR 2.00)	Amendment to Scope or Budget (Attach updated scope and budget)
(Attach RFR and Response or other procurement supporting documentation)	Interim Contract (Attach justification for Interim Contract and updated scope/budget)
<u>Emergency Contract</u> (Attach justification for emergency, scope, budget) <u>Contract Employee</u> (Attach <u>Employment Status Form</u> , scope, budget)	<u>Contract Employee</u> (Attach any updates to scope or budget)
Legislative/Legal or Other: (Attach authorizing language/justification, scope and budget)	<u>Legislative/Legal or Other:</u> (Attach authorizing language/justification and updated scope and budget)
The following COMMONWEALTH TERMS AND CONDITIONS (T&C) has been execu	
X Commonwealth Terms and Conditions Commonwealth Terms and Conditions	For Human and Social Services
in the state accounting system by sufficient appropriations or other non-appropriated fun- Rate Contract (No Maximum Obligation. Attach details of all rates, units, calculation	s, conditions or terms and any changes if rates or terms are being amended.)
X Maximum Obligation Contract Enter Total Maximum Obligation for total duration	
a PPD as follows: Payment issued within 10 days% PPD; Payment issued within 15	h <u>EFT</u> 45 days from invoice receipt. Contractors requesting accelerated payments must identify 5 days % PPD; Payment issued within 20 days % PPD; Payment issued within 30 days 15 day cycle statutory/legal or Ready Payments (<u>G.L. c. 29, § 23A</u>); only initial payment Prompt Pay Discounts Policy.)
	ENT: (Enter the Contract title, purpose, fiscal year(s) and a detailed description of the scope of
Tisbury will develop an understanding of flooding and sediment transport along	g documentation and justifications. FY20 Coastal Resilience Program Grant. The Town of g the Vineyard Haven shoreline to support a detailed analysis of potential shoreline
management strategies. ANTICIPATED START DATE: (Complete ONE option only) The Department and Contra	actor codify for this Contract or Contract Amondment that Contract obligations:
X_ 1. may be incurred as of the <u>Effective Date</u> (latest signature date below) and <u>no</u> obli	
2. may be incurred as of, 20, a date LATER than the Effective Date below	
_3. were incurred as of, 20, a date PRIOR to the Effective Date below, and the authorized to be made either as settlement payments or as authorized reimbursement attached and incorporated into this Contract. Acceptance of payments forever release.	the parties agree that payments for any obligations incurred prior to the <u>Effective Date</u> are ent payments, and that the details and circumstances of all obligations under this Contract are ases the Commonwealth from further claims related to these obligations.
	new obligations being incurred after this date unless the Contract is properly amended, provided e its termination for the purpose of resolving any claim or dispute, for completing any negotiated ng or final payments, or during any lapse between amendments.
Amendment has been executed by an authorized signatory of the Contractor, the Depa approvals. The Contractor makes all certifications required under the attached Contractor of perjury, agrees to provide any required documentation upon request to support compl Massachusetts are attached or incorporated by reference herein according to the follow this Standard Contract Form including the Instructions and Contractor Certifications, the	
	AUTHORIZING SIGNATURE FOR THE COMMONWEALTH:
X:	X: Date: (Signature and Date Must Be Handwritten At Time of Signature)
Print Name: John W Gerounde	Print Name: William Nichols
Print Title: Town administrator	Print Title: Finance Director

COMMONWEALTH OF MASSACHUSETTS ~ STANDARD CONTRACT FORM



ATTACHMENT B Project Budget

The Town of Tisbury shall be paid an amount of \$129,951.00 for work done in association with the FY20 Coastal Resilience Grant program. Payment will be made in accordance with the following schedule:

FY 2020

\$129,951.00 Upon reimbursement request after partial and/or final completion of work, from funds available in Appropriation Account Number 2000-7026

Attachment A: Scope of Services

Project Approach

To provide a more detailed quantitative assessment of both the risks and potential mitigation strategies, an evaluation of coastal processes and potential storm damage related to infrastructure in Vineyard Haven Harbor is proposed. This analysis would include an evaluation of tidal, wave, and sediment transport dynamics within the harbor system, including the Lagoon Pond shoreline in the vicinity of Beach Road. The evaluation also will incorporate a quantitative assessment of severe storms as it relates to both tidal flooding (storm surge "pathways") and wave overtopping/damage along the district referred to as the "Harbor/Lagoon Pond/SSA Triangle". The storm assessments will include present conditions, as well as anticipated sea-level rise over the next 30-to-50 years. The overall study area will extend along the Vineyard Haven Harbor shoreline from the breakwater protecting the inner harbor to Eastville Beach.

Ongoing efforts to address upland stormwater issues, planned for completion in the fall of 2019, will be integrated into the understanding of flooding concerns within the study area, as appropriate. The results of the quantitative coastal processes analysis (and information gathered from other Town efforts) will form the basis for developing specific mitigation strategies to address both flooding and erosion concerns within the study area. In addition, it is anticipated that results from this evaluation can be used to inform future zoning strategies to ensure long-term coastal resiliency for the Vineyard Haven Harbor region.

Overall, the approach can be divided into four (4) major tasks, which are described in more detail in the "Approach" section:

- 1. Site-Specific Analysis of Overtopping and Coastal Flooding
- 2. Quantitative Analysis of Coastal Change and Sediment Transport Processes
- 3. Initial Engineering Analysis to Screen Potential Alternatives
- 4. Prioritize Shore and Flood Protection Strategies

Project Goals & Objectives

The overall goal of the planning analysis is to produce a "roadmap" that the Town can utilize to proactively plan for projects that will improve the coastal resiliency of the downtown Vineyard Haven community. By basing future shore protection decisions on a quantitative analysis of coastal processes, the Town of Tisbury anticipates more cost-effective and sustainable solutions in the long-term. The proposed project is intended to meet the following goals and objectives:

- Utilize existing tidal, bathymetric, and environmental information to inform development of the baseline models needed to support the project.
- Utilize numerical tidal hydrodynamic, wave, and sediment transport models to quantitatively
 evaluate coastal processes along the Vineyard Haven Harbor shoreline between the breakwater
 protecting the inner harbor to Eastville Beach. This modeling will be performed for existing
 conditions, as well as anticipated sea-level rise over the next 30-to-50 years.

- Perform a screening analysis of various engineering and/or management alternatives that can be
 used to improve sustainability of the Vineyard Haven shoreline between the breakwater
 protecting the inner harbor to Eastville Beach.
- Develop recommended alternatives for potential shore protection and flood management options, where evaluation criteria will be focused on both long-term sustainability, as well as overall protection of the coastal environment.
- Promote transferability of the project through development of a clear concise summary report that demonstrates the steps taken to support the alternatives evaluations and derive a recommended shoreline management approach.

Project Tasks

The following Tasks are proposed to accomplish these planning goals:

Task 1: Site-Specific Analysis of Overtopping and Coastal Flooding

An evaluation of the existing storm surge risk for the project area will be performed, specifically for the dominant nor'easters. At the base level, it is important to understand how frequently these types of storms can be expected and how frequently damage may occur at the present sea-level conditions. To accomplish this task, Applied Coastal will evaluate existing LiDAR data to determine the combined influence of "stillwater" coastal flood levels combined with the influence of wave set-up within the subject area. The assessment of flood levels will be based on available historical tide data for both Nantucket and Woods Hole augmented with local information (e.g. tide data available for Vineyard Haven Harbor and Lagoon Pond), as well as more recent modeling efforts by the U.S. Army Corps of Engineers. Once existing coastal flooding conditions are established, likely sea-level rise scenarios for the next 10, 25, and 50 years will be developed from the best available data and projections. Information used to develop these scenarios will be based on the most defensible scientific information available including (a) historical relative sea-level trends for southeastern Massachusetts, as well as longer-term records from the region (likely New York City and Boston), and (b) assessments utilized as the basis for the International Panel on Climate Change (IPCC) and information contained within the Massachusetts Climate Change Clearinghouse. Once the most likely sea-level rise scenarios have been developed, an evaluation of relative flood risk determined for each area of a specific land elevation will indicate the increase in flooding frequency associated with each timeframe.

Task 2: Quantitative Analysis of Coastal Change and Sediment Transport Processes

The glacially-derived Vineyard Haven Harbor shoreline, between the breakwater protecting the inner harbor to Eastville Beach, consists of a man-modified shoreline of relatively narrow coastal beaches and coastal armoring, where port facilities have been developed to service island needs. In addition, major offshore coastal engineering structures anchor the two ends of the study area (the inner harbor and Eastville Beach breakwaters), where the overall wave climate and associated sediment transport dynamics are governed by the influence of these structures. Understanding the geologic nature of the beach/shoreline system, as well as the strong anthropogenic influences, allows determination of the limits of the local "littoral system". In this manner, determinations can be made regarding potential future sources of natural littoral sediments (i.e. beach nourishment) to the Vineyard Haven Harbor shoreline. This evaluation also will include how anthropogenic changes may have altered the natural sediment transport processes and the influence of sea-level rise upon the long-term stability of the harbor coastline.

An initial evaluation of both long-term and short-term shoreline change is planned to provide site-specific analyses of observed sediment migration along the shoreline. The analysis will incorporate available information from any relevant beach nourishment projects placed along the shoreline, as well as other available information. It is anticipated that a shoreline survey of the observed high water line will be performed to evaluate recent changes in shoreline position. Comparison of the 2019 surveyed shoreline position with historic shorelines developed as part of this project will provide needed information for the evaluation of sediment movement in this region.

A quantitative analysis of coastal processes will be required to develop a defensible evaluation of sediment transport along the harbor shoreline that can provide the basis for development of shoreline management strategies. Three numerical models are proposed to evaluate coastal processes: a wave refraction model, a longshore sediment transport/shoreline change model, and a tidal hydrodynamic model. The wave refraction modeling is required to estimate the driving forces governing longshore transport. Since the local bathymetry and breakwater structures modify the wave directions and heights, this model will be used to determine how local changes in wave conditions modify sediment transport potential along the beach. The wave analysis will be based upon Nantucket Sound waves that control local coastal processes. The study will incorporate stateof-the-art wave refraction analysis techniques to transform the offshore waves to the shoreline for long-term sediment transport calculations. Once wave heights and directions for various conditions have been determined, a sediment transport model will be employed to estimate the annual longshore sediment transport rate along the shoreline region depicted in Figure 1. Sediment transport direction and rate are important parameters that characterize the stability of the nearshore system. In the longshore direction, a system in equilibrium will have a small net transport along the length of the shoreline due to balanced wave and current forces. The equilibrated shoreline may experience high wave energy conditions; however, there will be an overall balance in transported sediment volume in both longshore directions. Utilizing a combination of the wave model information and existing historical shoreline change data, a predictive model of longshore sediment transport will be calibrated to observed conditions. Once the shoreline change model has been calibrated, it can be utilized to simulate the longevity and migration of potential beach nourishment projects, as well as the influence of sand-trapping structures. This aspect of the modeling effort is critical for assessing the viability of potential shore protection alternatives.

Due to the low-lying nature of the Vineyard Haven Harbor shoreline, it also is anticipated that the planning evaluation will benefit from a hydrodynamic analysis of storm-induced flow. A hydrodynamic evaluation of storm surge dynamics will be developed to not only indicate water elevations, but also flow patterns through specific upland areas during severe events. The specific model will be calibrated based upon data from previous modeling efforts for Vineyard Haven Harbor and Lagoon Pond, where the model extent will allow assessment of flooding impacts along the Vineyard Haven Harbor shoreline, as well as within Lagoon Pond. Once calibrated for existing conditions, various storm surge scenarios will be evaluated, including appropriate sea-level rise scenarios for the approximate 50-year timeframe of the assessment. Within the context of ongoing coastal evolution, the influence of relative sea-level rise also will be accounted for within the analysis.

In this manner, quantitative information can inform the evaluation of engineering alternatives for appropriate time horizons.

Task 3: Initial Engineering Analysis to Screen Potential Alternatives

Combining the results developed in Tasks 1 and 2, as well as the extent of existing coastal armoring along the Vineyard Haven Harbor shoreline, an engineering analysis of potential shore and flood protection options will be developed based upon shoreline 'reach'. Results from the sediment transport analyses will inform the viability of different shore protection strategies at meeting the long-term sustainability goals of the project. Specifically, the alternatives evaluation will assess the relative role of existing armoring, land elevation, and "sediment starvation" to overall mitigation needs. This will include an evaluation for enhancing sediment supply to provide additional coastal resiliency for appropriate areas.

Once alternatives are evaluated relative to their applicability to shoreline and flood damage protection, screening of these options will be performed to determine the most appropriate alternatives. In general, both exclusionary and discretionary criteria will be utilized to assess the applicability of different options, considering aspects of each alternative including engineering, economics, and potential environmental impacts. Once the alternatives screening process is completed, a matrix of potential shore protection options will be developed for each shoreline 'reach'.

Task 4: Prioritize Shore and Flood Protection Strategies

Once potential shore and flood protection options, along with potential infrastructure improvement costs, have been identified for each of the shoreline reaches along the study shoreline, an assessment of vulnerability and "need" will be developed based on the overall economic parameters. While it is important to protect all vulnerable coastal properties to the extent practical, the Town realizes that developing a proactive plan for addressing coastal hazards in the most critical areas needs to be the priority.

Utilizing the coastal processes, engineering alternatives, and economics data developed from the above tasks, a prioritization scheme for shore and flood protection within the study limits will be developed. This scheme likely will include both 'hard' and 'soft' shore protection measures, based on project need within each of the reaches identified. In general, economic drivers will be critical to this prioritization process; however, coastal resiliency also will need to be addressed, as future shore protection expenditure planning will require that a sustainable outcome will be achieved based upon a 50-year planning horizon.

Finally, a critical aspect of the overall prioritization plan for shore protection is public "buy-in" regarding both the process and the findings of this planning effort. It is anticipated that several (a minimum of three) public presentations will be needed, as stakeholder input is critical to the overall process of coastal planning efforts. Two community "working sessions" are planned to initially present draft alternatives and then the final findings of the report.

Attachment B: Scope of Services FY20 CZM Coastal Resilience Grant Program Town of Tisbury September 26, 2019

Contractor

John Grande, Town Administrator Town of Tisbury 51 Spring Street Tisbury, MA 02568 508-696-4201 jgrande@tisburyma.gov

Project Title

Evaluation of Coastal Processes and Storm Impacts to Support Resilient Planning and Mitigation Strategies for the Vineyard Haven Harbor Shoreline

Summary

The Town of Tisbury will develop an understanding of coastal processes (e.g., tidal, wave, and sediment transport) and storm flooding to support a detailed analysis of potential shoreline management strategies that will provide resiliency for the Vineyard Haven Harbor shoreline over the next 50 years. The harbor area represents the transportation hub for nearly all services to the island, including port facilities for the Steamship Authority, and contains one of the island's largest industrial and commercial areas. The project will provide a scientific basis for the town to proactively plan for projects that will improve the resiliency of the harbor area. The project has broad local support and advances four priority action items identified in the town's Municipal Vulnerability Preparedness plan.

Scope, Budget and Schedule

As described in the application to the Coastal Resilience Grant Program, the following tasks will be performed under this contract (See Pages 12 and 13).

Reimbursement

To receive grant funding, the applicant must have agreed to the fiscal requirements of the program by providing a statement from the authorized signatory of the organization acknowledging and accepting the following:

- Matching funds, in cash and/or in-kind, must total at least 25% of the total project cost.
- Grant funding is provided on a reimbursement basis according to the agreed upon scope of work and contract and only upon receipt of a reimbursement package as described below. Advanced payments shall not be made. No payments will be made for Massachusetts sales tax.
- Work done prior to the project start date (the date issued and signed by the Commonwealth's Department Authorized Signatory) shall NOT be reimbursed.

 No funds will be granted for work performed after June 30, 2020. Requests for reimbursement will NOT be accepted after July 31, 2020.

Once tasks are completed and deliverables have been submitted to, reviewed and approved by CZM, the contractor may submit a reimbursement package containing the following items:

- 1. A letter (on city or town letterhead) from the contractor with the contractor's authorized signatory requesting reimbursement.
- All invoices requesting payment, including those from subcontractors. Invoices must itemize
 costs consistent with the agreed upon scope of work. Invoices must demonstrate sufficient
 information for CZM to determine that the services were performed and/or products were
 received, and that the invoiced items meet all contractual performance requirements.
- 3. A detailed breakdown of the required match for the project. For in-kind services, include sufficient details to demonstrate the total amounts of match contributed, and as appropriate, a list of personnel, hours worked, hourly rate, etc.

Reimbursement packages should be submitted according to the above schedule, and reflect work performed according to the schedule of deliverables included in the project budget. Reimbursement is generally made within 45 days subsequent to approval of a reimbursement package.

CZM will retain a minimum of ten percent (10%) of the total maximum obligation of funds until all contract provisions are satisfied and final reports and other products are delivered and accepted.

Progress Reporting

To help CZM stay current on work being conducted over the course of the project, it is expected that the Contractor will submit **monthly** progress reports describing:

- Significant activities that have occurred to show progress toward deliverables
- Whether a change in schedule or scope of work is anticipated
- Whether costs are anticipated to be overrun or underrun
- If additional assistance from CZM or partners is needed

At the conclusion of the project, the Contractor will submit a final Summary Report (See Case Study template provided).

	FY20 Coastal Resilience Grant Scope Template	nce Grant Sco	pe Template			
Project Task Description	Deliverables	Deliverable Due Date	Invoice Due Date	Grant	Match	Total
Task 1: Site -Specific Analysis of Overtopping and Coastal Flooding						
Sub-task 1.1 - Kick-Off Meeting	Sign In Sheet and Meeting Notes	October 15, 2019	November 15, 2019	\$2.964	\$970	43 03V
Sub-task 1.2 – Site Specific Analysis of Overtopping and Coastal Flooding: Evaluate existing coastal flooding and storm surge risk for the project area, and future flooding with sea level rise projections for the next 10, 25, and 50 years.	Technical Memorandum	February 28, 2020	March 30, 2020	\$10,950	\$3,650	\$14,600
Total Task 1 Cost				\$13,914	\$4,620	\$18,534
Task 2: Quantitative Analysis of Coastal Change and Sediment Transport Processes						
Sub-task 2.1 Shoreline Change Analysis: Evaluate long and short term shoreline change, incorporating available information from beach nourishment projects, to provide site specific analyses of observed	Analysis included into Technical					
Scullifer Ingration. Sub-task 2.2 - Longshore Sediment	Memorandum (Sub-task z.z)			\$8,424	\$3,140	\$11,564
Transport Model: Determine wave directions and heights and employ sediment transport model to estimate annual longshore sediment transport rate along the study shoreline. Calibrate model to observed conditions.	Analysis included into Technical Memorandum (Sub-task 2.2)			\$22,200	\$7,400	\$29,600
Sub-task 2.2 - Hydrodynamic and Storm Surge Model: Conduct analysis of storm-induced flow to indicate water elevations and flow patterns through specific upland	Technical Memorandum	March 31, 2020	April 30, 2020	\$18,195	\$6,065	\$24,260

\$173,546

\$43,595

\$129,951

TOTAL PROJECT COST

areas during severe events.						
Total Task 2 Cost				\$48,819	\$16,605	\$65.424
Task 3: Initial Engineering Analysis to Screen Potential Alternatives						
Sub-task 3.1 - Alternatives Analysis: Combine results from tasks 1 and 2, as well as the extent of existing coastal armoring along the Vineyard Haven shoreline, to conduct engineering analysis of potential shore and flood protection options by shoreline 'reach.'	Draft Alternatives Analysis provided to Project Management Team for review and feedback. Analysis included in Technical Memorandum (Sub-task 3.2).			\$8.220	\$2.740	\$10.960
Sub-task 3.2 - Screening of Alternatives: Screen options to determine the most appropriate alternatives, including exclusionary and discretionary criteria to assess applicability of different options. Consider engineering, economics, and potential environmental impacts.	Technical Memorandum	April 30, 2020	May 31, 2020	\$4,680	\$1,560	\$6.240
Total Task 3 Cost				\$12,900	\$4,300	\$17,200
Task 4: Prioritize Shore and Flood Protection Strategies						
Sub-task 4.1 - Working Session #1	Powerpoint Presentation	April 30, 2020	May 31, 2020	\$7,329	\$2,425	\$9.754
Sub-task 4.2 - Prioritize Shore and Flood Protection				\$16,230	\$5,410	\$21,640
Sub-task 4.3 - Working Session #2	Powerpoint Presentation	May 31, 2020	June 30, 2020	\$7,329	\$2,425	\$9,754
Sub-task 4.4 - Draft Report	Draft Report	June 1, 2020	June 30, 2020	\$16,710	\$5,570	\$22,280
Sub-task 4.5 - Final Report and case study using template provided	Final Report and case study summary	June 30, 2020	June 30, 2020	\$6,720	\$2,240	\$8,960
Total Task 4 Cost				\$54,318	\$18,070	\$72,388

Case Study Template

Municipality: Project Title: Grant Award: \$

Match: \$

Community Overview:

Provide a general description of your community as a brief introduction to the project.

Description of Climate Impact:

Address the community's current and potential future vulnerability to climate change impacts. What are the specific threats to the project area/site and reasons for applying to the grant program?

Project Goals:

What were the specific goals of the project?

Approach and Result:

How did the project team implement the project? Describe the methodology or your approach to achieve the project goals. Describe, and quantify (where possible) project results (e.g. square footage of habitat restored or created). Provide web links, if available, to your project deliverables.

Lessons Learned:

What lessons were learned as a result of the project? Focus on both technical matter of the project and process-oriented lessons learned.

Partners and Other Support:

Include a list of all project partners and describe their role in supporting/assisting in the project.

Project Photos:

In your electronic submission of this report, please attach (as .jpg) a few representative photos of the project. Photos cannot show persons who can be easily identified, and avoid inclusion of any copyrighted, trademarked, or branded logos in the images.